

### REMARKS

In the Office Action, the Examiner rejected Claims 38-41, 43-46, and 48-52 under 35 U.S.C. §102(b) as being anticipated by US Patent No. 3,898,093 to Faulstich et al. The Examiner also rejected Claims 42, 47, and 53 under 35 U.S.C. §103(a) as being unpatentable over Faulstich in view of US Patent No. 4,525,425 to Church.

Applicant respectfully requests reconsideration and removal of the rejections.

*Regarding claims 38, 43, 48, and 52.* The present invention is well suited for a band-pass filter, and it is limited to a light filter. In the present invention, transmittance at wavelengths of 950nm to 1600nm is important. When plate thickness is 10mm, transmittance in that range of wavelengths is 90% or higher. In contrast, the optical quality glass disclosed by Faulstich is limited to lenses for eyeglasses. As such, Faulstich does not disclose or suggest anything about transmittance of wavelengths in the range of 950nm to 1600nm.

Additionally, the Examiner points out that Faulstich's thermal expansion coefficient is  $\alpha \times 10^{-7}$  per °C of generally 85 to 100 at 20 to 300 °C. However, while there may appear to be an overlapping range in the value of the coefficient of thermal expansion between the present invention ( $90$  to  $120 \times 10^{-7}/^{\circ}\text{C}$ ) and Faulstich, the coefficient of thermal expansion of the present invention actually is entirely different from that of Faulstich, so there is no overlap.

The coefficient of thermal expansion of glass becomes larger as the region of measured temperature is shifted to a higher temperature side. Supposing hypothetically that the glass of the present invention had the same coefficient of thermal expansion as the

glass of Faulstich, if the region of measured temperatures of the glass of the present invention is on the lower temperature side of the glass of Faulstich, the lower limit of  $\alpha$  of the glass of the present invention would be lower than the lower limit of the glass of Faulstich. The upper limit of  $\alpha$  of the glass of the present invention would also be lower than the upper limit of the glass of Faulstich.

In the glass of the present invention, the region of measured temperatures (i.e., -20 to +70°C) is on the lower temperature side (i.e., 20 - 300°C) of the region of measured temperatures of the glass of Faulstich.

Unexpectedly, however, the lower limit of  $\alpha$  of the present invention is higher than the lower limit of  $\alpha$  of the glass of Faulstich, and the upper limit of  $\alpha$  is higher than the upper limit of the glass of Faulstich. Accordingly, if the region of measured temperatures were the same in the present invention as in Faulstich, the value of  $\alpha$  of the glass of the present invention would become larger than that of the glass of Faulstich.

Since the glass of the present invention has such a high coefficient of thermal expansion, it can impart a compressive stress to the film due to the difference in the coefficient of thermal expansion. It can thereby avoid variation in the reflective index at a temperature at which the light filter is used. Therefore, it is well suited for use as a light filter. The glass of Faulstich has no such advantageous result of having a high coefficient of thermal expansion and is therefore not well suited for use as a light filter.

Therefore, the glass of the present invention is entirely different in the coefficient of thermal expansion from Faulstich.

*Regarding claims 39-40, 44-45, and 49-50.* The applicant respectfully disagrees with the Examiner's contention that the claimed physical properties relating to Young's modulus and the Vickers hardness are inherently present in the prior art of record. As stated above, the glass of the present invention is entirely different in the coefficient of thermal expansion from Faulstich. Therefore, since the glass of the present invention is different from the glass in Faulstich, the physical properties relating to Young's modulus and the Vickers hardness are not necessarily inherently present in the prior art of record.

*Regarding claims 41, 46, and 51.* The applicant respectfully disagrees with the Examiner's contention that the claimed physical property relating to the light transmittance for a plate thickness of 10mm being 90% or over within a wavelength range from 950nm to 1600nm is inherently present in the prior art of record. As stated above, the glass of the present invention is entirely different in the coefficient of thermal expansion from Faulstich. Therefore, since the glass of the present invention is different from the glass in Faulstich, the physical property relating to the light transmittance for a plate thickness of 10mm being 90% or over within a wavelength range from 950nm to 1600nm is not necessarily inherently present in the prior art of record.


*Regarding claims 42, 47, and 53.* The light filter of the present invention is made by forming a dielectric film on a glass having a high coefficient of thermal expansion. By employing the novel glass of the present invention (which has such a high coefficient of thermal expansion) as a substrate material, compressive stress can be imparted to the film due to the difference in the coefficient of thermal expansion between the glass and the film; variation in the refractive index at a

temperature at which the filter is used can thus be eliminated. Neither Faulstich, Church, nor Murphy disclose, or even suggest, such concepts as are embodied in the present invention. Furthermore, since Faulstich has no such high coefficient of thermal expansion (as discussed above), the advantageous result of the light filter of the present invention could not be obtained even if Faulstich, Church, and Murphy were all combined together. Therefore, the light filter of the present invention is not obvious from the cited references.

Based on the foregoing, applicant respectfully submits that the present claimed invention is not anticipated under §102(b) by the Faulstich reference nor rendered unpatentable under §103(a) by the Faulstich, Church, and Murphy references. Removal of the rejections based on the Faulstich reference is therefore requested.

An early and favorable action is earnestly solicited.

Respectfully Submitted,

A handwritten signature in black ink, appearing to read 'JVC', with a large, sweeping flourish extending from the end of the signature.

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